

Descriptions of a New Genus and Eight New Species of Eastern Pacific Fissurellidae, with Notes on Other Species

BY

JAMES H. McLEAN

Los Angeles County Museum of Natural History
900 Exposition Boulevard, Los Angeles, California 90007

(Plate 54; 1 Text figure)

THE EASTERN PACIFIC FISSURELLIDAE are known chiefly through PILSBRY's monograph in the Manual of Conchology (1890). More recently the species of the Panamic province were treated by KEEN (1958) and those of the northeastern Pacific in a dissertation by McLEAN (1966). A comprehensive review of the entire family similar to that for the western Atlantic by FARFANTE (1943a, 1943b, 1947) is not available. Most of the genera discussed by FARFANTE are represented in the eastern Pacific and these papers are of considerable value for comparison.

In assisting with the treatment of Fissurellidae for the forthcoming revised edition of "Seashells of Tropical West America," by Dr. Myra Keen, I have realized that there is a need for the description of a new genus and several new species. These descriptions are presented here.

Five of the new species are from the tropical Panamic faunal province, while 3 are from the south temperate Peruvian province. Two of the Panamic species are from the Galápagos Islands, approximately 600 miles west of Ecuador. The 3 species from the Peruvian province are from the offshore Chilean island groups Juan Fernandez and San Felix. These islands bear much the same relationship to the Peruvian province as do the Galápagos Islands to the Panamic province. Many of the species are endemic. ODHNER (1922) listed 39 species from shallow water at the Juan Fernandez Islands, 50% of which were endemic. Very little is known of the offshore mollusks of the Chilean islands. The 3 species described herein result from collecting on the *Anton Bruun* Cruise 17 that visited these islands in July 1966.

Institutions mentioned in the text and their abbreviations are as follows:

- AHF – Allan Hancock Foundation (gastropod collection on loan to LACM)
CAS – California Academy of Sciences, San Francisco
LACM – Los Angeles County Museum of Natural History

- SU – Stanford University, Stanford, California
USNM – United States National Museum, Washington, D. C.

Tugali chilensis McLEAN, spec. nov.

(Plate 54, Figures 8, 9)

Description of Holotype: Shell small, elongate ovate, with nearly parallel sides, moderately elevated. Apex blunt, nucleus worn smooth, directed posteriorly, $\frac{1}{4}$ the length of the shell from the posterior margin. Anterior slope convex, posterior slope concave, sides nearly flat. On a level surface the sides of the shell are slightly raised relative to the ends. Sculpture consists of radial and concentric ribbing of nearly equal strength, beaded at intersections and producing indistinct square cancellations. Concentric growth irregularities are also apparent. Approximately 30 primary ribs diverge from the apex and secondary ribs appear at half its final size, resulting in about 60 ribs of identical size and strength that wrap around the thick margin of the shell. No selenizone or crenulation apparent at the anterior margin. Interior of holotype encrusted, characters of muscle scar not discernible. Length, 10.4 mm, width 6.5 mm, height 3.8 mm (holotype).

Type Material: Holotype, LACM 1306.

Type Locality: Carvajal Bay, south end of Isla Más a Tierra, Juan Fernandez Islands, Chile, 34°50' S, 79°00' W. A single dead specimen was collected at low tide by Mr. Roger Seapy of the University of Southern California, 17 July 1966, *Anton Bruun*, Cruise 17.

Discussion: Although represented by but a single shell in poor condition, it is adequate for subsequent recognition and its description emphasizes the presence of this Australasian genus in the Eastern Pacific fauna. *Tugali chilensis*

is a species closely related to *T. suteri* THIELE, 1916, of the New Zealand fauna. Specimens of the latter species on hand are slightly larger, have more numerous ribs and the apex at $\frac{1}{3}$ the distance from the posterior margin.

The Juan Fernandez Islands are approximately 400 miles west of the mainland of Chile at the latitude of Valparaiso.

Nesta galapagensis McLEAN, spec. nov.

(Plate 54, Figures 18, 19)

Description of Holotype: Shell small, white, base elongate ovate. Nucleus extremely minute, at the posterior end of the shell just above the margin, twisted to the right (in apertural view). The anterior face of the shell forms the entire dorsal surface, the posterior face represented by a narrow shelf, as in the hinge area of a bivalve. A fairly broad selenizone extends from the nucleus to the anterior margin, bounded by raised ridges and provided with U-shaped incremental lines. Sculpture consists of numerous radial and concentric ribs of equal strength, forming squarish cancellations. The radial ribs on crossing the concentric ribs are drawn out in blunt lamellar points, visible only in lighting from the direction of the apex. Entire anterior margin broken in holotype. Interior glossy, with heavy callus deposition along the line of the selenizone. Length, 5.5 mm, width, 3.3 mm, height 1.7 mm (holotype).

Type Material: Holotype, LACM - AHF 1307.

Type Locality: Tagus Cove, Albemarle (Isabella) Island, Galápagos Islands, Ecuador, 0°16' S, 91°22'30" W, 80-100 fathoms, *Velero III* bottom sample station 432, 15 January 1934, 1 specimen.

Discussion: *Nesta galapagensis* is the first reported species of *Nesta* H. ADAMS, 1870, in the Eastern Pacific. According to FARFANTE (1947, p. 98) there are two other species of *Nesta*, the strongly sculptured type species, *N. candida* H. ADAMS, 1870, from the Red Sea, and the nearly smooth sculptured *N. atlantica* FARFANTE, 1947, from Florida. Having concentric sculpture, *N. galapagensis* is therefore closer to the type species, but the apex in that species curves below the posterior margin.

Emarginula LAMARCK, 1801

The genus *Emarginula* was unknown in the Eastern Pacific until the description of *E. velascoensis* SHASKY, 1961, from the Gulf of California (SHASKY, 1961, p. 18).

A second tropical west American species represented by 4 specimens from the Galápagos Islands and Colombia taken at depths of 45 to 100 fathoms answers the description of *E. tuberculosa* LIBASSI, 1859, given by FARFANTE (1947, p. 100; pl. 44, figs. 1-7). This is a relatively large species, the largest specimen from 45 fathoms, off Octavia Rocks, Colombia, measures 13.4 mm in length and 7.2 mm in height (Plate 54, Figures 10, 11). Sculpture consists of numerous fine radial and concentric ribs producing beaded intersections and deep square pits. Every 4th rib at the margin, each of which represents an original primary rib diverging from the apex, is slightly more prominent than adjacent secondary ribs, as in FARFANTE's illustrations. No essential points of difference can be detected. *Emarginula tuberculosa* is also represented in the eastern Atlantic off Portugal and the Azores and its type locality is the Sicilian Miocene. It is therefore a species of considerable antiquity and broad distribution elsewhere; its presence in the Eastern Pacific is not unexpected.

Descriptions of two additional eastern Pacific species follow. These two species were taken in the same dredge haul at a depth of about 90 fathoms at San Felix Island, approximately 550 miles off the coast of central Chile, and therefore are members of the south temperate or Peruvian faunal province.

An anatomical observation pertaining to at least two species of *Emarginula* may be made here. COWAN (1969) observed that in *Fissurisepta pacifica* COWAN, 1969, the ctenidium is monopectinate and attached to the roof of the mantle cavity, a condition not previously reported in Fissurellidae. One specimen of *E. tuberculosa* from Tagus Cove, Isabella Island, Galápagos has a dried animal and the holotype of *E. angusta*, new species, also has the animal dried in place. Both specimens have monopectinate ctenidia resembling those illustrated by COWAN, suggesting that this structure of the ctenidium may be more widespread in the emarginuline fissurellids than has been supposed.

Emarginula angusta McLEAN, spec. nov.

(Plate 54, Figures 14, 15)

Description of Holotype: Shell small, sturdy, yellowish white, base elongate-oval, with nearly parallel sides; height about $\frac{3}{5}$ the length, apex posterior, directly above the posterior margin of the shell. Anterior slope broadly convex, posterior slope convex below the apex, sides of shell nearly straight. Nucleus minute, turned under the succeeding part of the shell. Sculpture consists of 16 strong primary cords diverging from the apex; secondary

cords develop on the anterior and lateral slopes and reach nearly the strength of the primary cords at the margin; concentric sculpture consists of raised ridges that reach only half the thickness of the primary ribs but form beads at intersections and deep squarish pits. Margin crenulated by rib extensions. The slit is long and narrow, about 1/5 the length of the anterior slope; the lamellae along the fasciole are thickened, equal in number and thickness to the concentric ridges. Interior glossy, dried animal remaining in the shell. Length, 6.8 mm, width, 4.6 mm, height, 4.1 mm (holotype).

Type Material: Holotype, LACM 1308.

Type Locality: Off San Felix Island, Chile, 26°20' S, 80°02' W, 170 - 160 meters (93 - 87 fathoms), *Anton Bruun*, Cruise 17 station 676B, Menzies trawl, 12 July, 1966, 1 specimen.

Discussion: *Emarginula angusta* differs from other Eastern Pacific and Western Atlantic species in having an elongate and narrow basal outline, hence the name, meaning narrow. Other species have a more oval basal outline. In addition, the lamellae of the fasciole in *E. angusta* are broad and thick, unlike the other species that have thin lamellae.

Emarginula dictya McLEAN, spec. nov.

(Plate 54, Figures 16, 17)

Description of Holotype: Shell small, fragile, white, base ovate, height about 1/2 the length, apex posterior, directly above the posterior margin of the shell. Anterior slope convex, posterior slope flat sided below the apex. Nucleus minute, greatly overhung by the succeeding part of the shell. Sculpture consists of 20 primary cords diverging from the apex; secondary cords develop on the anterior and lateral faces but do not reach the strength of the primary cords at the margin; concentric sculpture consists of narrow raised ridges that do not cross the

primary ribs. Margin crenulated by rib extensions. The slit is long and narrow, almost 1/2 the length of the anterior slope; the lamellae along the fasciole are thin, raised nearly to the margins of the fasciole. Interior glossy, thickened near the slit, anal fasciole marked by thickened callus. Length, 4.6 mm, width, 3.6 mm, height, 2.3 mm (holotype).

Type Material: Holotype, LACM 1309; 1 paratype LACM 1310.

Type Locality: Off San Felix Island, Chile, 26°20' S, 80°02' W, 170 - 160 meters (93 - 87 fathoms), *Anton Bruun*, Cruise 17 station 676B, Menzies trawl, 12 July, 1966, 2 dead and slightly broken specimens.

Discussion: *Emarginula dictya* differs from the 3 other eastern Pacific species of *Emarginula* in having weak concentric ribbing and consequently lacking the beaded sculpture at intersections of the ribs. It resembles *E. sicula* GRAY, 1825, of the Western Atlantic and Mediterranean. *Emarginula sicula*, however, is larger, more elevated, and the apex is near the summit rather than below the mid-height position as in *E. dictya*.

The name is derived from the Greek noun, *dictyon*, net, with reference to the fine reticulate sculpture.

Rimula DEFRANCE, 1827

The genus *Rimula* was established in the Eastern Pacific with the description of *R. californiana* BERRY, 1964 from Catalina Island. As this species has not been illustrated, the holotype is figured here (Plate 54, Figure 3). Additional specimens are known from Guadalupe Island (LACM 65-42) and San Martin Island, Baja California (CAS 24041), at depths of 10 - 20 fathoms on gravel bottoms.

KEEN (1968, p. 403) showed that *Rimula mazatlanica* CARPENTER, 1857, represents a juvenile *Diodora*. A second eastern Pacific *Rimula* may now be added.

Explanation of Plate 54

Figures 1, 2: *Fissurella (Cremides) decemcostata* McLEAN, spec. nov. Holotype LACM no. 1313. Acapulco, Mexico × 1 1/2
 Figure 3: *Rimula californiana* BERRY, 1964. Holotype, SU 9500. Catalina Island, California × 6
 Figure 4: *Rimula stricta* McLEAN, spec. nov. Holotype USNM no. 267019. San Esteban Island, Mexico × 6
 Figures 5, 6, 7: *Diodora punctifissa* McLEAN, spec. nov. Holotype LACM - AHF no. 1311. Wenman Island, Galápagos Islands × 4
 Figures 8, 9: *Tugali chilensis* McLEAN, spec. nov. Holotype LACM no. 1306. Juan Fernandez Islands, Chile. × 4

Figures 10, 11: *Emarginula tuberculosa* LIBASSI, 1859. AHF no. 431-35. Octavia Rocks, Colombia × 2
 Figures 12, 13: *Leurolepas roseola* McLEAN, spec. nov. Holotype LACM - AHF no. 1315. Tres Marias Islands, Mexico × 3
 Figures 14, 15: *Emarginula angusta* McLEAN, spec. nov. Holotype LACM no. 1308. San Felix Island, Chile × 5
 Figures 16, 17: *Emarginula dictya* McLEAN, spec. nov. Holotype LACM no. 1309. San Felix Island, Chile × 5
 Figures 18, 19: *Nesta galapagensis* McLEAN, spec. nov. Holotype LACM no. 1307. Isabella Island, Galápagos Islands × 5



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 7



Figure 8



Figure 9



Figure 6



Figure 10



Figure 11

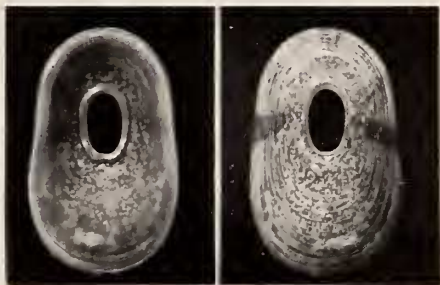


Figure 12

Figure 13

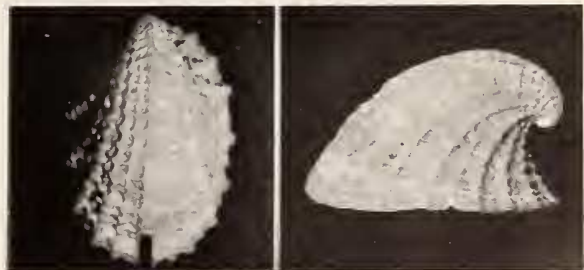


Figure 14

Figure 15

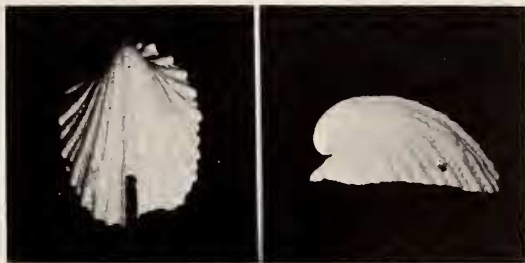


Figure 16

Figure 17

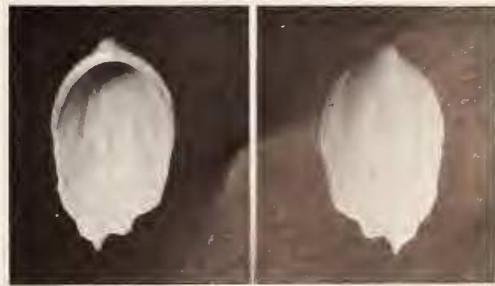


Figure 18

Figure 19

Rimula astricta McLEAN, spec. nov.

(Plate 54, Figure 4)

Description of Holotype: Shell small, fragile, white, base elongate-ovate, with nearly parallel sides; height less than $\frac{1}{2}$ the length. Anterior slope convex, posterior slope concave. Nucleus of one small whorl, placed $\frac{1}{6}$ the length of the shell from the posterior margin. Fissure small, its squared off posterior extremity at mid position on the anterior slope, its anterior extremity drawn out into a long tapered slit. Fasciole extending from apex to fissure, provided with lamellae, fissure and fasciole bordered by raised ridges which coalesce anterior to the fissure. Sculpture consists of approximately 32 primary ribs, crossed by concentric ridges of nearly equal strength, weakly beaded at intersections and forming deep squarish pits; a few secondary ribs arise but do not reach the strength of the primary ribs at the margin. Margin finely crenulated by rib extensions. Interior lustrous, translucent, the concentric sculpture and fasciole of the outer surface visible from within. Length, 5.3 mm, width, 3.3 mm, height, 1.9 mm (holotype).

Type Material: Holotype, USNM 267019.

Type Locality: East side of San Esteban Island, Gulf of California, 28°41' N; 112°34' W. The single specimen was collected by Paul Bartsch, 13-14 April, 1911.

Referred Material: LeRoy Poorman Collection, Pasadena, California, 1 specimen dredged at 17 fathoms off San Carlos Bay, Guaymas, Sonora, April, 1965. This specimen has a large hole in the shell but the margin is intact. It measures: length, 6.4 mm, width, 3.9 mm, height, 2.0 mm.

Discussion: *Rimula astricta* differs from *R. californiana* in having a sharp rather than blunt anterior termination of the fissure. This is the most distinctive feature of *R. astricta*, upon which the name, meaning drawn together, tight, or narrow, is based. *Rimula astricta* also has a more elongate basal outline. The only elongate western Atlantic species is *R. frenulata* DALL, 1889, but this species does not have the pointed fissure nor the coalesced ribs anterior to the fissure.

Diodora punctifissa McLEAN, spec. nov.

(Plate 54, Figures 5 to 7)

Description of Holotype: Shell small, sturdy, white, base oval, sides of shell raised relative to the ends, height about $\frac{2}{3}$ of the length. Apex intact, blunt pointed, erect,

about $\frac{1}{3}$ the length of the shell from the front margin. Fissure small, just anterior to the apex, anterior end of fissure rounded, posterior end broader. Sculpture consists of about 30 primary ribs originating on the apex; secondary ribs emerge close to the apex and assume nearly equal strength at the margin. Concentric sculpture of weak ridges, somewhat irregular; cancellate pitting strongly developed only on the early growth stage of the shell. Interior callus broad, extending more than $\frac{1}{4}$ the length of the shell, markedly truncate posteriorly. Length, 9.5 mm, width, 7.0 mm, height, 6.0 mm (holotype).

Type Material: LACM-AHF 1311; 5 paratypes, LACM-AHF 1312; 1 paratype, CAS 13276; 1 paratype, USNM 679561.

Type Locality: Off Wenman Island, Galápagos Islands, Ecuador, 1°23'10" N, 91°48'45" W, 100-150 fathoms, *Velero III* station 143-34, 11 January 1934, 8 dead specimens. The paratype specimens are immature, the largest measures 7.6 mm in length. The species may live at a lesser depth.

Discussion: *Diodora punctifissa* differs from all species of *Diodora* known to me in having a fully intact apex, not absorbed by the fissure. The fissure is extremely small and is located on the anterior slope of the shell as in the genus *Puncturella*. The posteriorly truncate internal callus possessed by *D. punctifissa* is the main diagnostic feature of *Diodora*. Other species of *Diodora* having partially intact apices are known.

The name meaning small cleft calls attention to the smallness of the fissure.

Fissurella (Cremides) decemcostata McLEAN, spec. nov.

(Plate 54, Figures 1, 2)

Description of Holotype: Shell of medium size, sturdy, depressed. Fissure just forward of center, oblong, faintly tripartite, about $\frac{1}{9}$ the length of the shell. Sculpture of 10 broad, raised, nodular ribs, the 2 anterior ribs closely adjacent. The ribs project at the margin, lines connecting their terminations are slightly concave. Fine irregular striae are present on the rib surfaces and interspaces. Concentric sculpture limited to growth irregularities, resulting in broad nodules on the ribs. Color whitish, the channels separating the fine riblets dark brown where the surface is not worn smooth. Interior glossy, greenish white, callus area blue gray, bordered with reddish brown, interior with reddish brown stains extending anteriorly and posteriorly from the callus to the edge of the muscle impression scar. Length, 28.2 mm, width, 18.5 mm, height, 5.8 mm (holotype).

Type Material: Holotype, LACM 1313; 1 paratype, LACM 1314; 1 paratype, USNM 679562.

Type Locality: Playa Caleta, Acapulco, Guerrero, Mexico, 16°51' N, 99°55' W. The type lot consisting of 3 specimens was collected by the late Earl C. Huffman, 18 December, 1937.

Referred Material: Numerous lots are in museum collections from the Tres Marias Islands, Mexico (LACM 65-13), to Oaxaca, Mexico. The species occurs on flat, exposed reefs in the intertidal zone. The upper surface is frequently abraded and usually covered with dense tufts of red algae.

Discussion: *Fissurella decemcostata* is the only eastern Pacific species having primary sculpture of 10 broad ribs. *Fissurella microtrema* SOWERBY, 1835, is a closely related species sharing the same habitat but this species typically has 3 strong anterior ribs and irregular strong ribbing throughout. The only other species having the irregular purple staining in the interior is *F. rubropicta* PILSBRY, 1890, but it differs in having a more elevated shell with strong ribbing throughout. The irregular purple staining of *F. decemcostata* is invariably present and immediately serves to separate shells from *F. microtrema*.

Leurolepas McLEAN, gen. nov.

Type Species: *Leurolepas roseola* McLEAN, spec. nov.

Diagnosis: Shell small, moderately elevated, basal outline oblong, sides nearly parallel; margin in one plane, aperture large, oval, just anterior to center, radial sculpture lacking, concentric sculpture of thin, raised lamellae; color reddish brown with darker rays; margin thick, rounded, smooth; apertural callus narrow, encircled by a distinct suture; muscle attachment area close to internal margin.

Animal not capable of retracting within the shell, $1\frac{1}{2}$ times the length of the shell (preserved), mantle enveloping the shell margin on all sides, covering $\frac{1}{4}$ the area of the shell, extending down to cover the head and foot, surface of mantle with minute pustules, pigmentation pattern matching that of the shell; snout $\frac{1}{2}$ the length of the tentacles, sides of foot weakly pigmented, with an epipodial row of tongue-shaped papillae.

Radula fissurelline, rachidian tooth similar in size and shape to the adjacent lateral teeth, outermost lateral large, bicuspid.

Discussion: The small rachidian tooth of *Leurolepas* serves to place it in the subfamily Fissurellinae as delimited by THIELE, 1929, in company only with the genus

Fissurella BRUGUIÈRE, 1789, and such Australasian genera as *Amblychilepas* PILSBRY, 1890, and *Macrochisma* G. B. SOWERBY, 1839, in which the animals are also not capable of retraction within the shell. The other eastern Pacific and western Atlantic genera with large animals such as *Fissurellidea* ORBIGNY, 1841, *Lucapina* G. B. SOWERBY, 1835, *Lucapinella* PILSBRY, 1890, *Megathura* PILSBRY, 1890, and *Megatebennus* PILSBRY, 1890, all have an extremely broad rachidian tooth and are thereby relegated to the subfamily Fissurellidinae as delimited by McLEAN (1966).

The presence of a member of this otherwise Australasian group of genera in the Eastern Pacific is noteworthy. *Leurolepas* differs from *Amblychilepas* and *Macrochisma* and subgenera thereof treated by MOORE (1960) in having the margin of the shell not greatly thickened internally and in having a margin resting entirely in one plane, rather than raised at both ends. On shell characters it differs from all other eastern Pacific fissurellid genera in lacking radial ribbing.

The name is derived from the Greek words *leuros*, smooth, and *lepas*, limpet, suggested by the lack of radial sculpture.

Leurolepas roseola McLEAN, spec. nov.

(Plate 54, Figures 12, 13)

Description of Holotype: Shell small, moderately elevated, thin but sturdy. Anterior and lateral slopes nearly straight sided, posterior slope convex. Fissure large, $\frac{1}{4}$ the length of the shell, forward of center, its posterior end at approximately the midpoint, sides of fissure not raised. Radial sculpture lacking except for minute striae visible under magnification; concentric sculpture of thin, raised growth lamellae. Surface translucent pink, with fine white flecking and broad lateral bands of tan. Margin smooth, rounded, slightly thickened but not offset on the inner side, a narrow muscle impression area borders the margin on the lateral and posterior sides. Internal callus around fissure narrow, rounded, separated from the interior by a distinct suture. Length, 11.2 mm, width, 6.7 mm, height, 2.7 mm (holotype).

Radula (Text figure 1): Rachidian and 3 adjacent laterals of nearly the same size with simple cutting edges, 4th lateral lacking cutting edge, 5th lateral large, bicuspid, marginal teeth numerous, finely serrate at tips (AHF 132-34).

Type Material: Holotype, LACM-AHF 1315 (intact animal preserved separately).

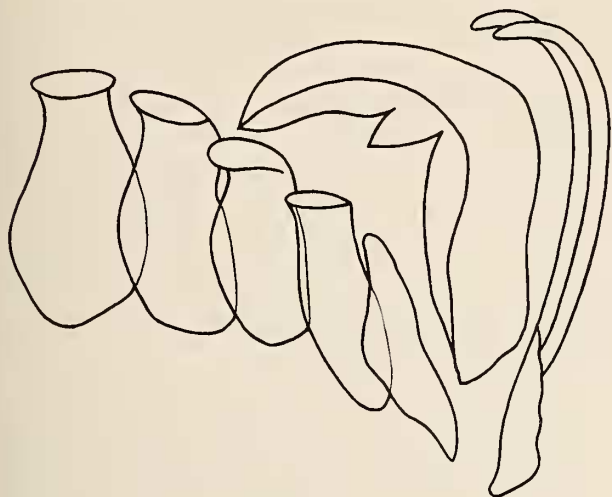


Figure 1

Radula of *Leurolepas roseola* McLEAN, spec. nov.

Type Locality: Magdalena Island, Tres Marias Islands, Mexico, 21°25'40" N, 106°21'10" W, 13 fathoms, *Velero III* station 970-39, 9 May, 1939, 1 specimen.

Referred Material: SU 50755, Espiritu Santo Island, Gulf of California, 14 - 25 fathoms, 3 specimens; CAS 27525, Clarion Island, Revillagigedo Islands, Mexico, 1 specimen; LACM A375, Clarion Island, 20 - 40 fathoms, 1 specimen; AHF 129-34, Socorro Island, Revillagigedo Islands, 14 - 18 fathoms, 3 specimens; AHF 132-34, Socorro Island, 40 fathoms, 1 specimen; US NM 567722, Mazatlan, 1 specimen; LACM 65-15, Banderas Bay, Mexico, 1 specimen; LACM 68-41, Barra de Navidad, Jalisco, Mexico, 1 preserved specimen diving at 30 feet; CAS 17832, Port Guatulco, Mexico, 5 specimens; LACM 65-21, Isla Otoque, Panama Bay, 5 - 15 fathoms, 1 specimen; AHF 213-34, La Plata, Ecuador, 7 - 10 fathoms, 3 specimens; AHF 221-34, Gorgona Island, Colombia, 20 fathoms, 1 specimen.

Discussion: *Leurolepas roseola* is evidently not uncommon throughout the Panamic province on rocky bottoms

in relatively shallow sublittoral depths. It is the only eastern Pacific fissurellid lacking radial ribbing and is easily recognized by its large foramen and pink coloration, which its name emphasizes.

LITERATURE CITED

- BERRY, SAMUEL STILLMAN
1964. Notices of new eastern Pacific Mollusca. — VI. Leaf. Malacol. 1 (24): 147 - 154 (29 July 1964)
- COWAN, IAN McTAGGART
1969. A new species of gastropod (Fissurellidae, *Fissurisepta*) from the eastern North Pacific Ocean. The Veliger 12 (1): 24 - 26; 3 text figs. (1 July 1969)
- FARFANTE, ISABEL PÉREZ
1943a. The genera *Fissurella*, *Lucapina*, and *Lucapinella* in the Western Atlantic. Johnsonia 1 (10): 1 - 20; pls. 1 - 5 (7 August 1943)
- 1943b. The genus *Diodora* in the Western Atlantic. Johnsonia 1 (11): 1 - 20; pls. 1 - 6 (29 December 1943)
1947. The genera *Zeidora*, *Nesta*, *Emarginula*, *Rimula*, and *Puncturella* in the Western Atlantic. Johnsonia 2 (24): 93 - 148; pls 41 - 64 (7 July 1947)
- KEEN, A. MYRA
1958. Sea shells of tropical West America; marine mollusks from Lower California to Colombia. i - xi + 624 pp.; illus. Stanford, Calif. (Stanford Univ. Press)
1968. West American mollusk types at the British Museum (Natural History). - IV. Carpenter's Mazatlan collection. The Veliger 10 (4): 389 - 439; pls. 55 - 59; 171 text figs. (1 April 1968)
- McLEAN, JAMES HAMILTON
1966. West American prosobranch Gastropoda: superfamilies Patellacea, Pleurotomariacea, and Fissurellacea. Ph. D. thesis, Biology, Stanford Univ., Stanford, Calif. pp. i - x + 1 - 255; pls. 1 - 7 (June 1966)
- MOORE, RAYMOND CECIL (editor and director)
1960. Treatise on invertebrate paleontology. Part I (Mollusca 1): xiii + 351 pp.; figs. 1 - 216
- ODHNER, NILS HJALMAR
1922. Mollusca from Juan Fernandez and Easter Island. pp. 219 - 254; pls. 8,9 In The natural history of Juan Fernandez and Easter Island, ed. Carl Skottsberg, vol. 3. Uppsala
- PILSBRY, HENRY AUGUSTUS
1890. Manual of conchology. 12: v-xii, 1-323; pls. 1-65.
- SHASKY, DONALD R.
1961. New deep water mollusks from the Gulf of California. The Veliger 4 (1): 18 - 21; pl. 4, figs. 1 - 10 (1 July 1961)